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RESERVES OF USSR FERROUS METALLURGICAL INDUSTRY

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The metallurgical industry is the basis of the USSR's technical, economic independence and defensive strength. The Fourth Five-Year Plan has placed before the ferrous metallurgical industry the gigantic task of not only restoring, but further expanding its productive capacity and increasing the smelting of metal by an average of 35 percent in comparison with the prewar level.

Restoration and growth of heavy industry and railroad transport are necessary conditions for successful restoration and growth of the whole USSR national economy.

"To fall behind in this job means to lose the material prerequisites which in World War II assured us military, economic and political victory," said Voznesenskiy in an address on the new plan.

To carry out its task the ferrous metallurgical industry must reactivate on a more thorough basis the largest plants of the USSR's southern metallurgical base, and at the same time expand in every way the metallurgical base in the Urals, Siberia and central Asia, and set up metallurgical plants in regions where up until now there has been no metallurgical activity.

In 1946 and 1947 the ferrous metallurgical industry moved steadily forward, raising production, becoming familiar with new types of steel and alloys, expanding the variety of rolled iron, pipe, hardware and refractory materials in keeping with the growing demands of the national economy.

In 1946 the production of pig iron was 12 percent over 1945, steel 9 percent, and rolled iron 13 percent. In the same year conversion of metallurgical plants from production of steel for military purposes to production of steel for wide assignment in consumer goods was completed.

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In 1947 smelting of pig iron was up 14 percent compared with 1946, steel 9 percent and rolled iron 15 percent. Enterprises of the Ministry of Ferrous Metallurgy fulfilled the gross production quota 101 percent. Especially noteworthy success was achieved in the rate of reconstruction of enterprises in the regions liberated from the Germans. In 1947 the smelting of pig iron in these regions, relative to 1946, rose 30 percent, rolled iron 35 percent, and coke roasting 36 percent.

In 1946 there were put into operation 6 blast furnaces, 18 open-hearth furnaces, 9 rolling mills, a high-power blooming mill and 11 coke ovens.

Among those enterprises which have undertaken fulfillment of the Five-Year Plan in 4 years are the Magnitogorsk and Kuznetak Combines, and the Novo-Tagil, Makeyevka and Zaporozh'ye Metallurgical Plants. Some enterprises are already operating at the production level planned for 1950. Enterprises of the Main Administration of Ural Metallurgy (Glavuralmet) have every possibility of fulfilling the Plan in 3 years and of producing 50 percent more metal in 1948 than in 1940.

There are many cases, however, in which reserves of production in the metallurgical industry are not being fully utilized.

Owing to idle time of blast furnaces in 1947, the national economy lost 200,000 tons of pig iron. There were particularly long idle periods in the metallurgical shops of machine-building plants of the Ministry of Transport Machine Building and the Ministry of Heavy Machine Building.

In 1947 ferrous metallurgical enterprises were not able to overcome the seasonal variations in production. This resulted in a slight decrease in production. Results for the first quarter of 1948, however, showed improvement in this respect.

In the first quarter of 1948, pig iron production was 36 percent higher than that for the same period in 1947. Steel output was 41 percent higher, rolled iron 43 percent, railroad track production 57 percent and iron pipe 41 percent. The quarterly plan was exceeded in all respects. The increase continued in the second quarter. The average daily cast-iron smelting in April was up 4 percent over March, steel smelting was up 4 percent and rolled iron production 2 percent. April and May quotas were also met.

The ferrous metallurgical enterprises of the southern and central regions fulfilled the plans for the first 5 months of 1948 as follows: pig iron 104 percent, steel 108 percent, rolled iron 109 percent, coke roasting 103 percent. Compared with the same period in 1947, steel output was up 81 percent, pig iron 61 percent, rolled iron 90 percent, coke roasting 42 percent and ore extraction 61 percent.

The rates of increase in the smelting of metal are higher than the average rates of increase in other industries. In the first quarter of 1948 the gross production of industry as a whole was 32 percent higher than that of the corresponding period in 1947. Coal mining was 20 percent higher, petroleum 24 percent, generation of electric power 18 percent. Smelting of pig iron, however, was up 36 percent, steel production 41 percent and rolled iron 43 percent. While the labor productivity of industry, as a whole, increased 21 percent, ferrous metallurgy increased its labor productivity by 36 percent. While the gross production of the liberated areas increased 59 percent, pig iron smelting in the same areas increased 75 percent, steel 97 percent and rolled iron 103 percent.

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In the first 5 months of 1948, the USSR metallurgical industry exceeded its planned output of track, seamless rolled wheels, dynamo iron, transformer iron, tin plate, petroleum pipes, steel cable and other products.

The first quarter of 1948 steel output per square meter of open-hearth furnace sole was 7.1 percent over 1940 production for the same period, March output was 8.2 percent higher and April output was 13 percent higher.

The coefficient of capacity utilization of blast furnaces in the first quarter of 1948 was 9.2 percent lower than in 1940. In March, it was 8.2 percent lower and by April, 13.5 percent lower than in 1940.

The idle time of open-hearth furnaces has been cut down in 1948. In 1947 open-hearth furnaces were idle 25.6 percent of calendar days. By April 1948 this had been cut to 19.3 percent. Idle time in 1940 amounted to 23 percent of calendar time.

It has been pointed out that Ural ore miners are lagging behind and causing unsatisfactory utilization of existing equipment and means of transport. Inadequate repairs have also been a factor. On the other hand, the work of the Magnitogorsk miners, who are successfully fulfilling the plan, reveals the results which can be attained if all mine administrations would properly utilize their internal reserves. Further growth of ferrous metallurgy in the Urals and the East requires decisive improvement in the work of the Bakal, Gorbogodatsk and other mine administrations.

At the June conference of Ural and Eastern metallurgists it became clear that the norms in general were too low. Thus it is the task of the Ministry of Ferrous Metallurgy to see that new mean-progressive norms based on the performance of the leading plants be speedily adopted and fulfilled in all branches of metallurgical production.

The contributions of the coal, railroad transport and electric power industries are vital to the success of the ferrous metallurgical industries. In the first quarter of 1948, especially in March, but also in April and May, the coal industry did not adequately supply metallurgists with Kuznetsk and Karaganda coking coals or with clean and washed Bonets coals.

Serious inadequacies in the supplying of ferrous metallurgical enterprises with electric power, particularly on the part of the Uralenergo (Ural Power) System, held up operations in such power-consuming processes as the smelting of electrolytic ferroalloys.

Enterprises should already be storing up raw materials and fuel for assuring uninterrupted operation during the fall and winter period of 1948-1949. For this reason, railroad transport must step up its hauling of coal, ore, fusing agents, refractory materials, scrap iron and other supplies.

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References to Specific Plants and Combines

## 1. Azovstal' (Azov Steel) Plant

1946: Second blast furnace, capacity 1,300 cubic meters, installed.

1947: Consumption of coke per ton of pig iron produced was 33 kilograms higher than in 1946. Weight of metallic charge per ton of pig produced, 2,051 kilograms; flue dust losses, 20 percent; weight of charge per ton of open-hearth steel produced, 1,185 kilograms.

1948: Steel output per square meter of open-hearth sole, 4.88 tons during first quarter, as compared to 4.66 tons in 1940. High-power rolling mills (rail-structural and blooming) will be put into operation.

## 2. Zaporozh'ye Metallurgical Plant

1947: Blast furnace, slabbing mill, strip mill and cold-rolling shop put into operation.

1948: A second section of the plant is under construction. A new blast furnace, 6 open-hearth furnaces and 2 coke ovens are to go into operation during the year.

## 3. Novo-Tagil Metallurgical Plant

1947: Blooming mill put into operation. Plant equipment was idle 3.3 percent of rated (nominal'nyy) time. Durability of crown refractories varied from 102 to 557 melts in open-hearth furnaces. Weight of charge per ton of pig iron produced, 1,842 kilograms.

## 4. Stalinsk Metallurgical Plant

1947: Equipment idle 5.2 percent of rated time. Increase in coke consumption per ton of pig iron produced: 79 kilograms more than in 1946.

1948: Steel output per square meter of open-hearth sole: 5.35 tons during first quarter, as compared with 4.44 tons in 1940.

## 5. "Serp i Molot" Metallurgical Plant

1947: Durability of open-hearth furnace crown refractories varied from 114 to 278 melts. Time required for one melt in 70-ton open-hearth furnaces cut from 8.5 hours to 7.5; for 25-ton furnaces, 7.5 hours to 4.8 hours.

## 6. Magnitogorsk Metallurgical Combine

1947: Weight of charge per ton of pig iron produced, 1,718 kilograms. Weight of charge per ton of steel produced on open-hearth furnaces, 1,089 kilograms. Valve control, furnace pressure regulation and air/fuel ratio maintenance in open-hearth furnaces have been mechanized.

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1948: Steel production per square meter of open-hearth sole, 4.91 tons during first quarter, as compared with 4.58 tons in 1940. The deterioration of dinas brick per ton of steel produced was 13.9 kilograms in 1946 and 12.8 kilograms in 1947, while the 1948 norm set by the Ministry was 14 kilograms. The "500" Mill during the first quarter had an output of 107.8 tons per hot-work hour, 110.3 tons in April and 110 tons in April and 106.3 tons in May. The norm for this period was 110 tons. The "300" Mill produced 52.8 tons per hot-work hour during the first quarter, 52.6 tons in April and 54.5 tons in May. The norm for the period was 55 tons.

#### 7. Kuznetsk Metallurgical Combine

1947: Equipment was idle 1.1 percent of rated time. Weight of charge per ton of steel produced in open-hearth furnaces, 1,085 kilograms. Valve control, furnace pressure regulation and air/fuel ratio maintenance in open-hearth furnaces have been mechanized.

1948: Steel output per square meter of open-hearth sole, 6.01 tons.

#### 8. Metallurgical Plant imeni Petrovskiy

1947: Coke consumption per ton of pig iron produced increased 37 kilograms over 1946. The weight of charge per ton of pig iron, 2,004 kilograms. Weight of charge per ton of steel produced on open-hearth furnaces, 1,216 kilograms.

1948: Steel produced per square meter of open-hearth sole, 4.68 tons during first quarter, as compared with 3.73 tons in 1940. The consumption of fuel in the fourth quarter of 1947 amounted to 270 kilograms per ton of open-hearth steel produced. With the 1948 norm set at that figure, the first quarter results showed consumption of only 253 kilograms of fuel per ton steel produced. The weight of metallic charge for blast furnaces during the last quarter of 1947 was 1,779 kilograms per ton pig iron produced. This rose to 1,800 kilograms during the first quarter of 1948, and fell to 1,739 kilograms in April, while the norm set by the Ministry on 10 April was 1,950 kilograms per ton of pig iron produced.

#### 9. Metallurgical Plant imeni Dzerzhinskiy

1946: A blast furnace of 945 cubic meters capacity went into operation.

1947: The durability of open-hearth furnace crown refractories varied from 140 to 269 melts. Coke consumption per ton of pig iron produced was 50 kilograms lower than in 1946. Weight of charge per ton of steel produced on open-hearth furnaces, 1,205 kilograms.

1948: In the fourth quarter of 1947 the consumption of fuel per ton of open-hearth steel produced was 299 kilograms, and in the first quarter of 1948 the consumption was 271 kilograms. The norm approved for the plant by the Ministry on 10 April 1948 was 300 kilograms. The 1948 norm for blast furnace charge weight was set at 1,850 kilograms per ton of pig iron produced. The fourth quarter 1947 charge weight was actually 1,850 kilograms, the 1948 first quarter 1,760 kilograms and the April charge weight 1,626 per ton of pig iron produced.

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## 10. Makeyevka Metallurgical Plant

1946: A blast furnace of 1,145 cubic meters capacity was put into operation.

1947: Coke consumption per ton of pig iron produced was 19 kilograms higher than in 1946. Flue dust losses amounted to 20 percent. Weight of charge per ton of steel produced in open-hearth furnaces, 1,186 kilograms.

1948: Several large open-hearth furnaces and rolling mills are to go into operation during the year.

## 11. Yenakiyevo Metallurgical Plant

1947: Equipment idle 7 percent of rated time. Flue dust losses, 21 percent. Weight of charge per ton of steel produced in open-hearth furnaces, 1,179 kilograms.

## 12. Chelyabinsk Metallurgical Plant

1947: Equipment idle 3.4 percent of rated time. Flue dust losses, 20 percent.

## 13. Alapayevsk Metallurgical Plant

First blast furnace put into operation in 1946.

## 14. Almaznaya Metallurgical Plant

First blast furnace put into operation in 1946.

## 15. Kazakh Metallurgical Plant

First rolling mill put into operation in 1947.

## 16. Uzbek Metallurgical Plant

First rolling mill put into operation in 1947.

## 17. Nikopol' Pipe Plant

A high-power "Bol'shoy Shtifel'" Pipe-Rolling Mill went into operation in 1947.

## 18. Metallurgical Plant imeni K. Libknekht

A seamless rolled steel wheel shop went into operation in 1947.

## 19. "Krasnyy Oktyabr'" Metallurgical Plant

The durability of open-hearth furnace crown refractories varied from 123 to 280 melts in 1947.

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